Project Arrivée: Counter-mapping Super-diversity in Brussels and Ghent with Architecture Students

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This paper introduces a counter-mapping attempt augmented by a Geoweb 2.0 platform in the context of two Belgian inner-city neighborhoods. The two aims of this project were to build a platform for the collective construction of a better understanding this dynamic super-diverse arrival environment and bring the various qualities and aspects of these super-diverse urban neighborhoods to foreground. In this study we report on the first results of this project which took place in Ghent and Brussels in 2014. Around 300 architecture students registered, interpreted and geocoded visible signs along preconceived tracks by means of a Geoweb 2.0 platform. Through field observations and interviews, the students created dynamic and interactive maps. We found that the large-scale mapping through Geoweb 2.0 makes it possible to discern different layers of use in arrival neighborhoods. These layers referred to different population groups which continuously have to negotiate each other's presence. Furthermore, the platform created the possibility to effectively and efficiently combine student fieldwork with online and offline lectures and offered students the opportunity to comment on, peer-review and learn from each other's insights. The findings will serve as an alternative information resource in the forthcoming Master's thesis graduation design studio which will be led by the first author.

Keywords: *counter-mapping, urban analysis, super-diversity, geoweb 2.0, geography*

Our School, Leuven University Faculty of Architecture has two campuses in Belgium: one in Brussels, and one in Ghent. Both of these campuses are located in the vicinity of neighborhoods which have been witnessing the emergence of a condition called 'super-diversity' during the last decade. Coined by Vertovec (2007:p3), this term describes an *unprecedented level and kind of complexity surpassing anything experienced in a specific domain*. This migration-driven phenomenon diversifies the urban-architectural spaces through the transformation of everyday practices; through an interplay between dynamic aspects of ethnicity, languages, religious tradition, regional and local identities, cultural values and practices, migration channel and legal status. Factors such as human capital, access to em-

ployment, locality, the responses by local authorities, services providers and local residents play a key role in this process (Vertovec, 2007). The neighborhoods referenced above generate and facilitate the super-diverse urban condition and perform as *neighborhoods of arrival* (Oosterlynck & Schillebeeckx, 2012).

In this context, the immediate super-diverse surroundings of our architectural schools are potential urban laboratories for understanding this emergent socio-spatial complexity. However, in the Belgian domain, there are significant challenges to such practices. First of all, these urban areas are framed often negatively in the Belgian public sphere (Schuermans & De Maesschalck, 2010; Meeus & De Decker, 2013). This leads to long-lasting stigmatization and makes it difficult to take alternative positions while recognizing various qualities of these spaces.

Second, the traditional authoritarian practices of mapping *render the material forms, inhabited spaces and even humans unseeable as features of the ordinary city* (Tonkiss, 2013: p.100). Referring to the informal economies of Calcutta, Roy (2004) calls this 'unmapping'. Indeed, while the real existing economies, livelihoods, land uses and population groups that are present in a particular place can be extremely visible, dominant mapping practices often unmap these realities. The practice of creating maps is a struggle around what should be on the map and what not. Mapping is therefore always 'unmapping' as well.

Mapping, or the production of spatial imaginaries through discourse, be it under the materialized form of map visualizations or indeed through materialized narratives in newspapers, occurs in specific contexts in which dominant images of a particular place can be reproduced or challenged. As an alternative practice, *counter-mapping* actively challenges these dominant images of particular places in a particular context (Peluso, 1995; Hodgson & Schroeder, 2002). A further challenge is to develop urban projects that build on counter-mapping practices, that generate alternatives to the dominant realities. Manuel de Solà-Morales calls *'counter-plans'* (Busquets, 2013:p11).

The recent developments in participatory digital spatial media, in other words, *the mediums or channels that enable, extend or enhance our ability to interact with and create knowledge on space online* (Elwood & Leszczynski, 2013: 544) generated a massive proliferation of opportunities for such practices (de Waal, 2014). The emergence of online geographical applications combining web 2.0 and associated technologies (Geoweb 2.0) during the last decade profoundly changed the ways through which geographic data, information and knowledge are produced and circulated (Sui et al, 2013). Today, a significant amount of location-based spatial data is created through Geoweb 2.0 platforms by "produsers" (Bruns, 2010:119) with no formal background in geography who contribute to the construction of spatial information over the Internet (Goodchild , 2009). Numerous studies demonstrated that these platforms are well-suited for participatory knowledge construction and alternative mapping practices (Pak & Verbeke, 2014).

Reflecting on the above, this paper will introduce a counter-mapping attempt augmented by a Geoweb 2.0 platform in the context of Belgian inner-city neighborhoods. The aim of this counter-mapping project therefore is first to build a platform for the mapping to understand this dynamic super-diverse arrival environment and second, to bring the various aspects of these superdiverse urban neighborhoods to the foreground. In line with the aims above the research questions of our study were:

- Can open-source Geoweb 2.0 applications afford the counter-mapping of urban 'arrival neighborhoods'?
- What can we learn from counter-maps created as a result?
- How can these be used in the future for developing counter urban projects?

The paper proceeds as follows. Section two explains the rationale of our project to unravel the

infrastructural dimension of complex and superdiverse neighborhoods. Section 3 expands on the affordances of geographic web platforms for countermapping. We use the term 'affordance' to describe the 'action possibilities latent in the environment in relation to agents and their capabilities' as introduced by Gibson (1986). Section 4 describes the methodology and the main results. Section 5 draws conclusions and discusses future directions.

2. THE SUPER-DIVERSE URBAN CONTEXT

Neighborhoods of arrival are the gateways through which many newcomers arrive in Belgium. In these neighborhoods, newcomers find access to work, housing, food, consumption products, legal assistance, leisure and so on. Services that are only provided in these *'neighborhoods of arrival'*, and are often provided by former migrants and migrants' (self-) organizations. Perceived by others as 'exotic', the smells, sounds, languages and images produced in these neighborhoods often help to feel newcomers at home by creatively reconstructing a 'home away from home' (Ley, 2008) in Belgium and make clear that the services which are provided are directed to them. But neighborhoods of arrival do not automatically produce social mobility for newcomers. What is needed for an arrival neighborhood to work as a social elevator is a welfare state that is actively present in these neighborhoods, provides services such as schooling for a superdiverse population and supports the manifold bottom-up initiatives that grow - often out of the dominant gaze in these areas (Oosterlynck & Schillebeeckx, 2012).

As a result of the continuous inflow and outflow of people and materials, these neighborhoods are constantly changing and are therefore an immensely complex part of the broader urban fabric that seems chaotic at first sight. Drawing on postcolonial urban theories (Simone, 2011), Blommaert (2013; 2014) however argues that "[such a] neighborhood can be understood in terms of a perpetually changing 'infra- structure' for superdiversity. We see how the complex demography and social stratigraphy in the neighborhood are supported by a flexible and dynamic infra- structure catering for nearly all segments of the population". The services provided by existing shops and organizations, the truncated languages only spoken in these neighborhoods and so on, constitute the infrastructural dimension of these neighborhoods, a dimension, Blommaert argues, that probably forms the order in the chaos. Through time, the infrastructure of these neighborhoods dynamically reorganizes itself to serve the quickly changing population of the neighborhood and it hence reflects the subsequent trajectories that run through the neighborhood (Blommaert, 2013; 2014; Maly et al., 2014).

But where does the metaphor of infrastructure come from? Infrastructures have a double nature. 'Traditional' infrastructures such as sewage systems, heating systems, transport systems, ICT-systems and so forth continuously relate people through objects in particular places. Internet would not exist without the interactions between wires, screens, data-processors and humans (Graham & Thrift, 2007). What emerges out of these interactions is a particular environment such as a warm house, an online environment, a moving tram. The infrastructural 'move' of Blommaert consists of bringing this insight to the 'socio-spatial environment' of the superdiverse neighborhood and then start to look at the people-object-place interactions that generate this environment. Indeed, as other authors like among others Leigh-Star (1999), Simone (2011), Amin (2014) and Tonkiss (2015) argue, urban infrastructures are systems of sociation. In the words of Tonkiss (2015: 385) *'Networks of infrastructure broker interaction - between people, between things, between people and things - and shape a larger environment that supports, secures and segments these interactions. In making things relatable, infrastructures also sustain wider conditions of urban social life*'. It means that in order to better understand what's going on in these neighborhoods we have to look at this infrastructural dimension. Our project therefore aims to make visible some aspects of this infrastructural dimension.

3. COUNTER-MAPPING AND GEOWEB 2.0 PLATFORMS

In order to make the infrastructural dimension of these neighborhoods visible, there is a need for developing and testing alternative analysis and mapping strategies and tools. In the past, counter-mapping projects that were based on traditional GIS technologies required significant knowledge and computer literacy above that of lay individuals (Milla et al., 2005). Furthermore, the high cost of specialized computers and software made access to mapping software nearly impossible for a large majority of local people, particularly in poor areas. Counter-mapping projects deepened divisions within communities along gender and economic lines (Cortbett et al. 2009) as advantaged parts of the society adopted the technologies faster than others.

However, Geoweb 2.0 enabled low-cost mapping and opened up GIS to the masses. During the last decade, a new generation of geographical web (Geoweb 2.0) applications emerged as a strong alternative to expert-led top-down production and analysis practices. Their availability and ease of use enabled novel modes of counter-mapping (Leszczynski, 2012: 544). The possibility of facilitating collective production at a historically unprecedented scale enabled harnessing the power of masses or 'crowdsourcing' location-based intersubjective information (Goodchild, 2009). Today, besides the established examples like openstreetmap (OSM), thousands of platforms offer free services to the communities. Any grassroots organization or NGO can launch a mapping website instantly at no cost. But the biggest challenge in these cases is their appropriation for specific purposes.

Since counter-mapping requires a critical attitude to existing mapping practices, it is often necessary to customize and redefine the operation modes of these free platforms. Unfortunately, most of these free services provide only a limited amount of freedom for customization and do not necessarily support configuring specific types of information to be collected. These limitations can only be overcome by setting up a low-cost service employing various open-source platforms and libraries. In this sense, open-source Geoweb 2.0 could potentially be considered as well-positioned for the collective counter-mapping of urban 'arrival neighborhoods'.

4. COUNTERMAPPING SUPER-DIVERSITY IN BRUSSELS AND GHENT WITH ARCHITECTURE STUDENTS

In this paper, we report on two similar cases of counter-mapping in Ghent and Brussels that were set up in spring 2014. Both cases were part of a second bachelor Sociology course for Architecture and Interior Architecture students. The students were asked to walk along a predefined trajectory and to register the 'linguistic landscape' of the area. The linguistic landscape is *'the visual language emplaced in the neighborhood - handwritten signs, publicity signs, shop signs, graffiti, official signs, posters and any other form of publicly visible inscription*' (Blommaert, 2013: 3) (see for instance Figure 1). These signs can be considered as a first indicator of the existing infrastructures in the neighborhood. We stay close to Blommaert by including not only signs that signal a shop, but also other kinds of services and events that do not necessarily are provided at the same place where the sign is located.

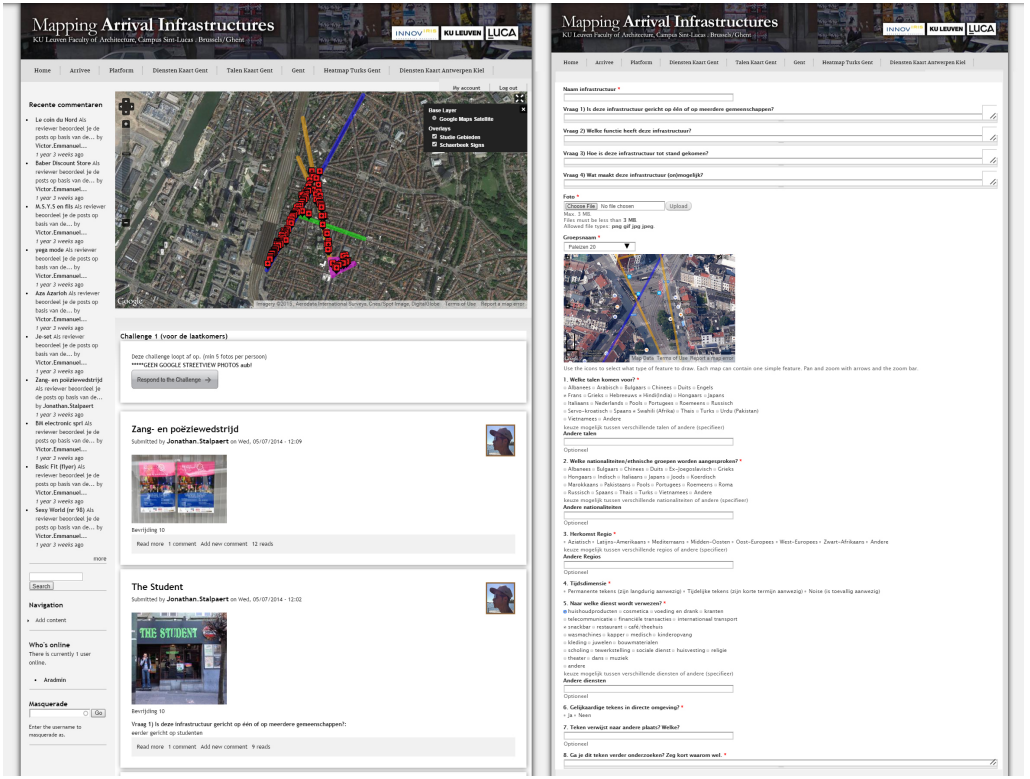
In a first round, students were offered a form in which a number of data for at least three 'signs' (including a picture of the sign) had to be registered (see Table 1). Afterwards, these data had to be submitted through the Geoweb platform.

Dimension	Questions
Location	*Where is the location? (to be indicated on a printed street plan)*
Ethnic dimension	*Which (hybrid) languages are on display? Which nationalities/ethnic groups are addressed? What region of origin is addressed?*
Time dimension	*Is it a permanent or temporary sign?*
Service	*To what service does the sign point?*
Spatial dimension	*Are there similar signs in the immediate surroundings? Does the sign refer to a place somewhere else?*

Table 1
Dimensions of collected data

In the second round, each student had to choose

Figure 1
The interface of the Geoweb 2.0 Platform used in the study (on the left) and the geomapping form used for entering information (on the right).



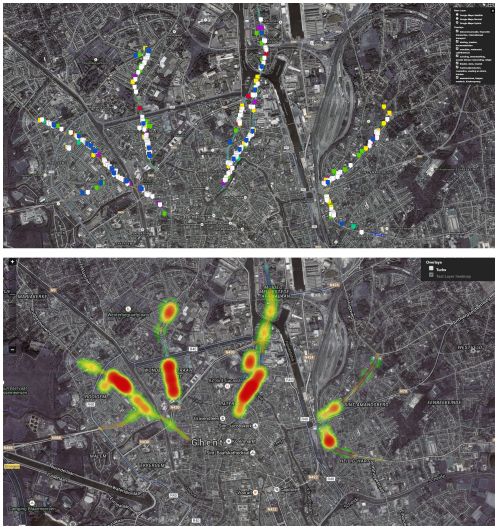
one of the signs and try to find an answer on the following questions:

- Is the infrastructure addressing one or more communities?
- What function does the infrastructure have?
- How did the infrastructure come into being?
- What does the infrastructure enable or disable in the future?

In the first case, 250 students formed groups of three and investigated four axes that run out of the center of Ghent (in February 2014) and that contain a high density of shops and services. In the second case, 70 students formed groups of two or three and investigated the area of Brabantstraat-Paleizenstraat in Schaarbeek, Brussels (in May, 2014). Informed by the experiences of the first case of Ghent, a slightly different approach was employed in the Brussels case.

The Platform used in this study was based on more than twenty open-source content management modules and other custom applications. It was developed with the contribution of real-life practitioners in the framework of a three-year post-doctoral research project supported by the Brussels-Capital Region (Pak, 2012). This platform was specifically customized to support the counter-mapping

practice described above. In this setup, Openlayers serves as the key library module for creating location-based information as well as complex geocoding and visualization. It provides the ability to connect to any popular mapping API available, including Google Maps, Bing Maps and OpenstreetMaps. In this setup, jQuery and its user interface (UI) library provide abstractions for low-level interactions as well as advanced effects and themeable widgets. Geotaxonomy was used to attach geoinformation (latitude, longitude, bounding boxes, etc.) to taxonomy terms. Heatmaps library allows dynamic rendering of the density using gradient blobs. It enables the dynamic visualization of three dimensional data, in which two dimensions represent Cartesian coordinates and the third dimension is used for visualizing the intensity of a specific dimension as a datapoint in relative comparison to the absolute maximum of the dataset.



Results

The counter-mapping study in Brussels and Ghent generated three types of results. Among those are a catalog with the different layers of use of the neighborhood; general and analytic cartographic visualizations and a learning environment for students to which students contributed themselves (Figures 1 and 2). The maps produced in this exploration reveal the vibrancy of these neighborhoods and the sheer volume of real existing activities in these superdiverse neighborhoods that are dominantly portrayed as in need of revival. The analysis of the pictures and student reports reveals some of these different layers in the neighborhood. Each layer represents a particular group of users whose traces can be found in the neighborhood. These layers are:

- Various kinds of transnational services: communication tools such as internet, telephone service, money transfer systems and so on to cater the transnational outlook of many of the inhabitants
- Affordable vegetables, meat and other food products and consumption products such as clothes, furniture, construction materials, and so on to cater a (very) low income population
- Services provided in Turkish, Bulgarian, Polish, Albanian, Arabic, and many other languages to create a 'home away from home' for particular ethnic-cultural groups
- Services that cater a Belgian cosmopolitan-minded middle class such as Turkish-Belgian restaurants and others
- Hybrid Flemish-Turkish, French-Turkish, or 'Islamic cultural' services to cater for a hybridizing ethnic-cultural population that is not necessarily low-income

The geolocated data on languages and services made it possible to create a diversity of maps. In what follows we illustrate some of the affordances of the maps produced in the Ghent case. Figure 2 demonstrates the bulk of the data. The mapping of the activities does not stop at administrative borders and in its simplicity, it clearly shows that there is an abundance of signs in the investigated streets. The heat map for the Turkish language (Figure 2 at the bottom) reveals centrality along the axes and suggest a

Figure 2
The diversity of services in the arrival neighborhoods in Ghent mapped by the students (at the top) and dynamic heatmap rendering the density of the Turkish Language signs observed (at the bottom).

sprawl towards the periphery. These kinds of observations provide critical knowledge that are not accessible through traditional mapping practices and enable novel ways of seeing and understanding the arrival neighborhoods.

The information produced by the students was not only limited to maps. Since the Geoweb 2.0 platform enabled complex queries, it was possible to create various statistics which revealed different nature of the two arrival neighborhoods. For instance, it is clear that the services were diversified differently in Brussels and Ghent (Figure 3 on the left top). The five most common services in Ghent were groceries, restaurants, telecommunications, household products and teahouses, whereas in Brussels these were clothing, groceries, household products, jewelry and cosmetics. This data suggest different target markets and reveal that the Brussels shops predominantly serve a female audience. In Ghent, groceries and restaurants seem to be the essential services; the most common and obvious backbone of arrival neighborhoods. Furthermore, in Ghent more references to the temporary services were observed (Figure 3 on the right top). The higher registration of temporary signs by the students indicates that there were more announcements for temporary events in this neighborhood.

Other interesting findings were about the languages observed (Figure 3 on the left botttom). In Brussels there was a clear domination of French, followed by Arabic and Turkish. In Ghent, Turkish was the most common language preceded by Dutch and Arabic. These also coincide with the nationalities and ethnic groups addressed (Figure 3 on the right bottom). Moroccans (126), Turkish (114), Albanians (48), Romanians (42) and Bulgarians (38) were the most five frequently referenced in Brussels; while in Ghent this distribution was majorly Turkish (130) followed by Moroccans (42) and Bulgarians (29), Romanians (24) and Albanians (22). These numbers provide clues on how often cultures manifest their identities and their dominance in the observed arrival neighborhoods. The high number of Bulgarian and Romanian references is also a sign of rising mobility after the inclusion of these countries into the European Union, most importantly the European common market. However, while treating the collected data, it is necessary to consider the reliability and accuracy aspects. During the reviewing of the student contributions for the students, we have noticed that a majority of the observations were accurate but Albanian language and ethnicity were significantly overrepresented.

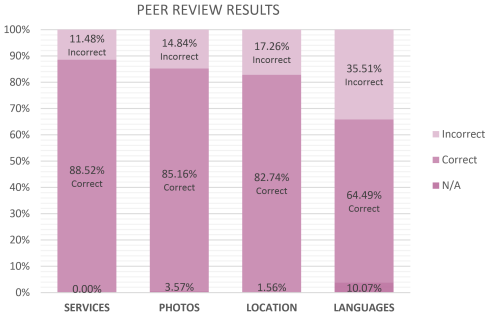


Figure 4
The results of the peer review indicating the reliability of observations made by the students.

Similar to other volunteered geographic information production practices, reliability appeared to be a weak point especially in recognizing languages as different as Urdu, Thai and Albanian. Naturally, the students lack expertise in socio-linguistics. Informed by the first study in Ghent, in order to understand the extent of this matter we have asked students to review at least 10 location-specific mappings submitted by their peers (Figure 4). As a result the students reported higher levels of reliability regarding the location (88.52%), services (85.16%), photos (82.74%). In line with the preliminary findings, the least reliable observation was the languages category (64.49%).

Another specific aspect of the reported countermapping practice is that it took place in a faculty of architecture. In this context, the platform provided a significantly different lens of analysis to the architecture students. Different than many other learning tasks given to them, it did not solely focus on the morphology of spaces and aesthetics. Rather, it offered a social-geographic lens for the recogni-

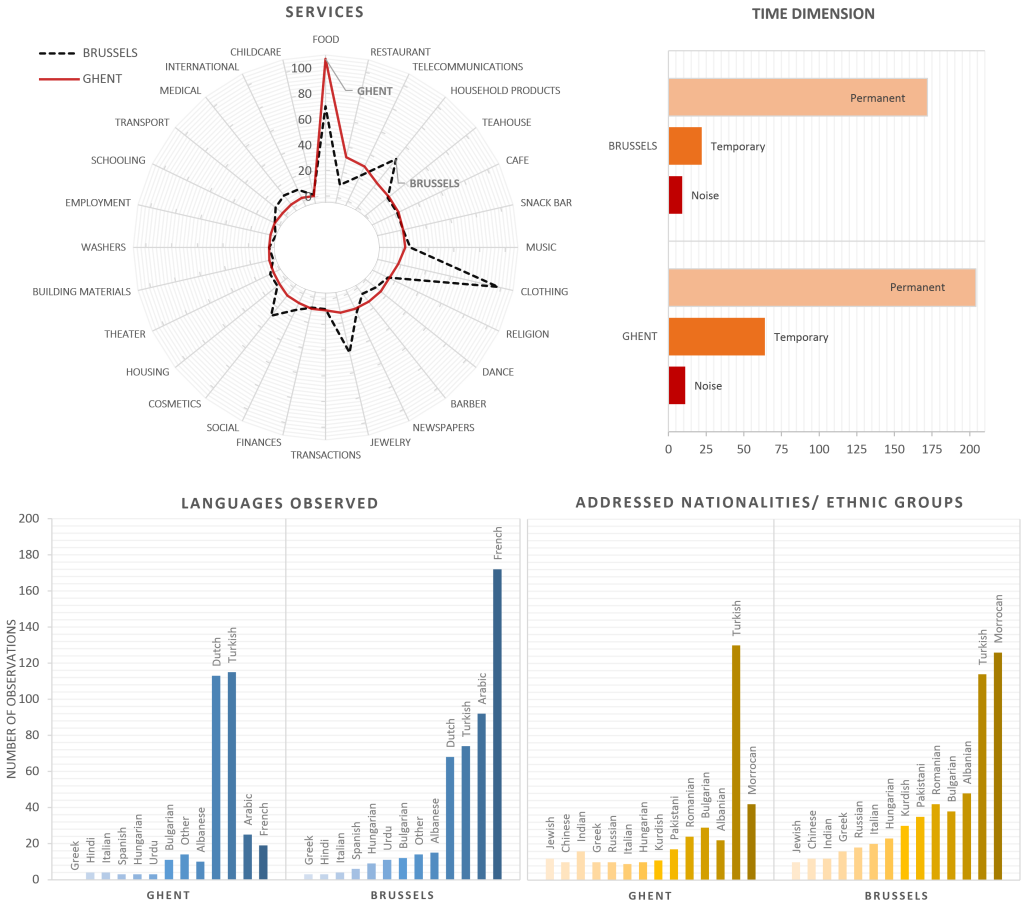


Figure 3
Comparative statistics generated from the mapping study addressing the differences in the variety of services (on the left top), the time dimension (on the right top), languages (on the left bottom) and addressed nationalities (on the right bottom).

tion of social and economic realities of spaces, a finer lens that operates in a context that is smaller than the scale of statistical zones; the scale of architecture hence delivering more relevant result to the students. Furthermore, Geoweb 2.0 inevitably stimulated peer-learning and cross pollination between the students in different cities as well as learning from the different conditions in these. It provided the students:

- A method for understanding the complexity of super diverse-neighborhoods
- Learning about the spatial issues relevant to a specific area by looking at how people manifest their identities and appropriate storefronts
- Learning making field work like a planner or a social scientist
- Stimulation of combining personal observations with data (aerial photos) and interviews (triangulation) (Loopmans et al., 2011)

CONCLUSIONS

The mapping exercise demonstrated the multi-layered and superdiverse character of two neighborhoods and in our opinion productively challenged the dominant views on the mapping and unmapping of this area. Maps such as these can connect to discourses that narrate these neighborhoods as super-diverse, multilayered and extremely complex.

As a learning platform for students the Arrivee platform provided numerous benefits:

- It provided an educational setting in which the dialogue between the students and the teaching staff was mediated by the use of Geoweb supporting, augmenting and enriching the reflective learning processes
- It enabled us to extend the learning that took place in the course beyond the teaching hours. While the students were disconnected from the physical learning environment, they could still learn from and comment on each other's projects and create a collective understanding of the context
- It enhanced the observation power of students through the overlaying of several information resources and databases, thus created richer learning experiences in which the learners collaborated in creating new knowledge and extended their own understandings
- The materials that are created during the course are documented in a structured manner and will be transferred to concurrent and future design studios, designers and design researchers

In the near future the produced maps will be used to gather the feedback of the residents. This feedback will be included in the analysis phase of a one-year Master's design studio thesis focusing on developing planning strategies and urban architectural interventions for the area. In this way, the platform and the data will be serve as a medium for recognizing hidden socio-spatial and temporal qualities and empower the students to create dynamic multi-dimensional representations. The counter urban projects will aim at addressing the issues and opportunities that are revealed during the counter-mapping process and challenge the dominant discourses surrounding the super-diverse neighborhoods.

Another evident future direction is to open up the developed platform to the local users of the arrival neighborhoods' infrastructure through the use of a simple mobile interface. Such a platform can be used as a vehicle to bring together the multiple trajectories that run through the neighborhood and bring into view the multi-layered character of complex neighborhoods such as the presented cases. Local self-organizations can create their own categories to map their presence in the neighborhood, their claims on space. However, significant challenges exist in this venture. Among those are accessibility, privacy issues, precision problems of the mobile devices and the high cost of data subscription plans; making it difficult to collect location-based data on the site with the contributions of the users of the arrival neighborhoods.

In addition, the presented practice has the potential to enable the representation of relational maps of specific events, in the form of networks. In the future, by integrating timelines and concept mapping libraries into the Geoweb platforms, these kinds of practices in the future can lead to the development of network maps representing the complexity of the arrival neighborhoods in a dynamic manner.

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REFERENCES

Amin, A 2014, 'Lively infrastructure', *Theory, Culture & Society*, 31(7-8), pp. 137-161

Blommaert, J 2013, *Ethnography, Superdiversity, and Linguistic Landscapes: Chronicles of Complexity*, Multilingual Matters, Bristol

Blommaert, J 2014, 'Infrastructures of superdiversity: conviviality and language in an Antwerp neighborhood',, *European Journal of Cultural Studies*, 17(4), pp. 431-451

Bruns, A 2010, 'From Reader to Writer: Citizen Journalism as News Produsage', in Hunsinger, J (eds) 2010, *International Handbook of Internet Research*, Springer, New York, pp. 119-133

Busquets, J 2013, 'Manuel de Solà-Morales, building an Urban Theory for the LUB', in School Of Design, Harvard (eds) 2013, *The Vision Of Manuel De Solà-Morales: Roots For A Twenty First Century Urbanism 10 October 2013 Harvard Gsd Piper Auditorium*, Harvard GSD, Cambridge, MA, pp. 11-19

Corbett, JM, Chaplin, L and Gibson, GR 2009, 'Indigenous Mapping', *International Encyclopaedia of Human Geography*, 1, pp. 377-382

Gibson, JJ 1986, *The ecological approach to visual perception*, Lawrence Erlbaum Associates, Hillsdale, New Jersey

Goodchild, MF 2009, 'Neogeography and the nature of geographic expertise', *Journal of Location-Based Services*, 3(2), pp. 82-96

Graham, S and Thrift, N 2007, 'Out of Order: Understanding Repair and Maintenance', *in Theory, Culture & Society*, 24(3), pp. 1-25

Haklay, M 2010, 'How good is volunteered geographical information?', *A comparative study of OpenStreetMap and Ordnance Survey datasets. Environment and Planning B, Planning and Design*, 37(4), pp. 682-703

Hodgson, DL and Schroeder, RA 2002, 'Dilemmas of Counter-Mapping Community Resources in Tanzania', *Development and Change*, 33(1), pp. 79-100

Leigh-Star, S 1999, 'The Ethnography of Infrastructure', *American Behavioral Scientist*, 43(3), pp. 377-91

Leszczynski, A 2012, 'Situating the geoweb in political economy', *Progress in Human Geography*, 36(1), pp. 72-89

Ley, D 2008, 'The immigrant church as an urban service hub', *Urban Studies*, 45(10), pp. 2057-2074

Loopmans, M, Leclercq, E, Newton, C and Raeymaekers, K 2011, *Plannen voor mensen : handboek sociaalruimtelijke planning*, Antwerpen, Garant

Maly, I 2014, *Superdiversiteit in Oostende*, Kif Kif vzw, Antwerpen

Milla, KA, Lorenzo, A and Brown, C 2005, 'GIS, GPS, and Remote Sensing Technologies in Extension Services: Where to Start, What to Know', *Extension Journal*, 43, p. 3

Oosterlynck, S and Schillebeeckx, E 2012, 'Voorbij sociale mix', in Holemans, D (eds) 2012, *Mensen maken de stad. Bouwstenen voor een sociaalecologische toekomst. EPO*, EPO, Berchem, pp. 117-127

Pak, B 2012, *A Virtual Environment Model for the Analysis and Evaluation of Alternative Urban Development Projects for the Brussels Capital Region, Final Project Report*, INNOVIRIS, Brussels

Pak, B and Verbeke, J 2014, 'Geoweb 2.0 for Participatory Urban Design: Affordances and Critical Success Factors', *International Journal of Architectural Computing*, 12(3), pp. 283-305.

Peluso, NL 1995, 'Whose woods are these?', *Countermapping forest territories in Kalimantan, Indonesia. Antipode*, 27, pp. 383-406

Roy, A 2004, 'The Gentlemans City: urban informality in the Calcutta of the New Communism', in Roy, A and AlSayyad, N (eds) 2004, *Urban Informality: transnational Perspectives from the Middle East, America, L and Asia*, Lexington Books, Lanham, MD, pp. 147-170

Saunders, D 2010, *Arrival city*, William Heinemann, London

Schuermans, N and Maesschalck, D 2010, 'Fear of crime as a political weapon: explaining the rise of extreme right politics in the Flemish countryside',, *Social & Cultural Geography,*, 11(3), pp. 247-262

Schuermans, N, Meeus, B and De Decker, P 2014, *Geographies of Whiteness and Wealth: White Middle Class Discourses on Segregation and Social Mix in Flanders, Belgium*, Journal of Urban Affairs

Simone, A 2004, 'People as infrastructure', *Public Culture*, 16(3), pp. 407-429

Tonkiss, F 2013, *Cities by design*, Polity Press, The Social Life of Urban Form. Cambridge-Malden

Tonkiss, F 2015, 'Afterword', *Economies of infrastructure, City*, 19(2-3), pp. 384-391